

## Two species of caridean shrimps (Decapoda: Hippolytidae and Nematocarcinidae) newly recorded from hydrothermal vents on the Manus Basin, southwestern Pacific

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**Abstract.**—Two species of caridean shrimps are newly recorded from hydrothermal vents on the Manus Basin, southwestern Pacific, at depths of 1540–1577 m. *Lebbeus manus*, new species, is related to *L. curvirostris* Zarenkov, 1976, *L. elegans* Komai, Hayashi & Kohtsuka, 2004, *L. longipes* (Kobjakova, 1936), *L. vicinus vicinus* (Rathbun, 1902) and *L. vicinus motereyensis* (Wicksten & Mèndez, 1982) because of the lack of strap-like epipods on the second and third pereopods; but characters of the rostrum, carapace and abdomen immediately distinguish the new species from the these five taxa. Subadult and juvenile specimens of *Nematocarcinus* are referred to *N. sp. aff. exilis*, but their definite identification is postponed until additional specimens become available for study. There are a few minor differences between the present Manus specimens and European specimens representing *N. exilis* (Bate, 1888), suggesting that the Manus population may indeed represent a separate species.

### Introduction

The hydrothermal vent shrimp fauna of the Manus Back-Arc Basin, southwestern Pacific, has been little documented. According to the review by Martin & Haney (2005), only the following two taxa

have been recorded: *Alvinocaris* sp. G (Alvinocarididae), and *Nematocarcinus* sp. (Nematocarcinidae). In addition, Hashimoto & Ohta (1999) reported the occurrence of a *Rimicaris* species at the PACMANUS site, but this report is evidently in error, because there are no definite records of this genus from the Indo-Pacific (Martin & Haney, 2005; Komai & Segonzac, 2008).

During the 2007 *Wave Mercury* campaign to the Manus Back-Arc Basin in 2007, extensive collections of the hydrothermal vent fauna were made. Among the collections, seven caridean species were preliminary identified: *Alvinocaris*? sp. 1, *Shinkaicaris* sp., *Chorocaris* sp. 1, *Chorocaris* sp. 2, *Lebbeus* sp. 1, *Lebbeus* sp. 2, and *Nematocarcinus* sp. Of these, the two *Chorocaris* species were abundant. In this paper, one new species of *Lebbeus* and one species of *Nematocarcinus* are reported. The alvinocaridid species will be treated in a separate paper, as determination of their systematic position requires extensive phylogenetic analysis, at least based on morphological characters. *Lebbeus* sp. 2 is referred to the *L. washingtonianus* (Rathbun, 1902) species complex, the taxonomy of which is still in need of revision (Komai *et al.*, 2004; Ah Yong, 2009).

### Material and Methods

Specimens were collected during the 2007 *Wave Mercury* campaign to the Manus Back-Arc Basin. Collection was done using

a ROV (Slingsby ST200 series) and brought onboard the CS *Wave Mercury* for study. Specimens reported in this study all came from Solwara 1 site (1540–1577 m depth).

All material used in this study is deposited in Muséum national d'Histoire naturelle, Paris (MNHN), and the Natural History Museum and Institute, Chiba (CBM). The postorbital carapace length (CL) is used as a standard measurement indicating the size of specimens.

For comparative purposes, the following material was examined.

*Lebbeus longipes* (Kobjakova, 1936). Yamato Bank, Sea of Japan, depth not recorded, 25 September 1988, trawl, coll. T. Nagasawa, 1 male (CL 12.3 mm), 2 females (CL 13.7, 16.0 mm), 4 ovigerous females (CL 16.0–16.1 mm), CBM-ZC 652.

*Nematocarcinus exilis* (Bate, 1888). BIOGAS IX, stn CP 33, Bay of Biscay, France, 47°33'N, 08°38'E, 2115 m, 1 May 1980, 5 males (CL 10.1–17.0 mm), 8 females (CL 17.2–21.2 mm), MNHN-Na; BALGIM (RV Cryos), stn DW 96, Gulf of Iberia, 34°23'N, 07°40'W, 1235–1281 m, 8 June 1984, 3 males (CL 12.4–13.0 mm), 4 females (CL 16.8–20.3 mm), MNHN-Na.

### Taxonomic Account

#### Family Hippolytidae

Genus *Lebbeus* White, 1847

***Lebbeus manus***, new species  
(Figs. 1–3)

Material examined.—Holotype: male (cl 10.8 mm), dive 51, Solwara 1, Site C5, Sample LB, Manus Basin, 03°79'S, 146°09'E, 1575 m depth, 14 April 2007, CBM-ZC 9629.

Description.—Body (Fig. 1) relatively slender; integument thin.

Rostrum (Fig. 2A) curving somewhat dorsally, distinctly overreaching antennal scale, 1.32 times longer than carapace, deepest at about midlength; dorsal margin armed with 3 rather long, slender teeth, including 1 on rostrum proper arising at basal 0.20 and 2 on carapace posterior to

level of orbital margin, posteriormost tooth arising at 0.26 of carapace length; ventral margin armed with 6 teeth in distal 0.60, slightly more widely spaced anteriorly; lateral carina obsolete. Carapace (Figs. 1, 2A, B) with low postrostral ridge extending to 0.40 of carapace length; orbital margin evenly concave; supraorbital tooth very small, arising at level of posterior margin of orbit (Fig. 2C); no conspicuous notch below supraorbital tooth; suborbital lobe distinct, rounded (Fig. 2C); antennal tooth well developed, slender; pterygostomial tooth tiny; anterolateral margin between antennal and pterygostomial teeth weakly sinuous.

Abdomen (Fig. 1) with pleura of anterior four somites rounded, that of fifth somite with sharp posteroventral tooth. Third somite rounded dorsally, posterodorsal margin somewhat produced posteriorly. Sixth somite 1.46 times longer than fifth somite, 2.14 times longer than high, with small posteroventral tooth and sharply pointed posterolateral process. Telson damaged, distal part missing, preserved part with 3 pairs of dorsolateral spines.

Eye (Figs 1, 2A) nearly spherical; cornea large, darkly pigmented, its maximum diameter 0.24 of carapace length; ocellus absent; eyestalk short, cup-shaped.

Antennular peduncle (Figs. 1, 2B) relatively slender; first segment longer than distal two segments combined, with slender spine at dorsolateral distal angle; stylocerite moderately slender, partially in touch with first segment mesially, terminating in sharp tooth, slightly overreaching distal margin of first segment; second segment about 0.60 times as long as first segment, slightly broadened distally, armed with slender tooth at dorsolateral distal angle; third segment short, with small tooth on dorsodistal margin. Lateral flagellum elongate; aesthetasc-bearing portion thickened, about 0.70 times as long as carapace, bearing dense aesthetascs; mesial flagellum elongate, longer than carapace.

Antenna (Figs 1, 2B, D) with moderately stout basicerite, bearing blunt dorsolateral

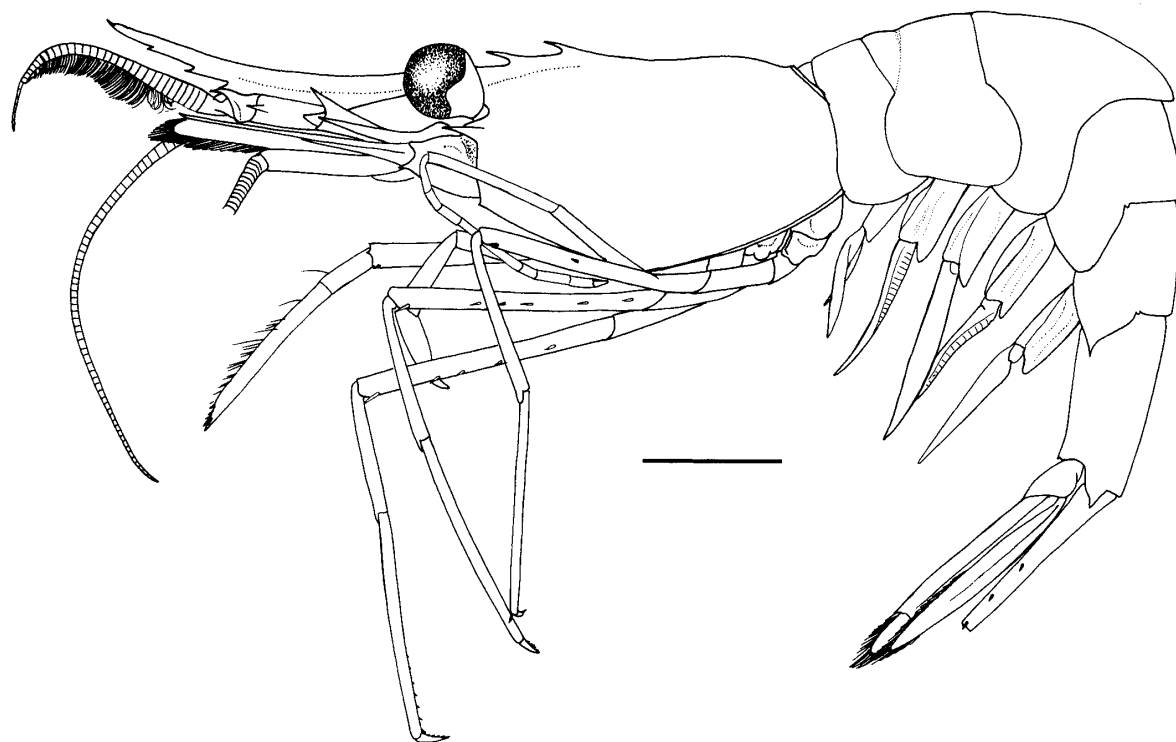


Fig. 1. *Lebbeus manus*, new species, holotype, male (cl 10.8 mm), habitus in lateral view. Scale bar: 5 mm.

projection and sharp ventrolateral tooth. Antennal scale 0.80 times as long as carapace, 3.30 times longer than wide; lateral margin nearly straight; distolateral tooth relatively slender, far falling short of produced distomesial margin of lamella. Carpocerite distinctly exceeding midlength of antennal scale.

Mouthparts not dissected. Third maxilliped (Figs. 1, 3A) relatively slender, slightly overreaching antennal scale; ultimate segment 3.00 times longer than penultimate segment, distal portion bearing several corneous spines (Fig. 3B); antepenultimate segment subequal in length to distal two segments combined, with 1 tiny dorsal and 1 lateral spinules on distal margin, and with 1 small movable spinule at ventrodistal angle (Fig. 3C); no exopod; coxa with strap-like epipod.

First pereopod (Fig. 3D) moderately

stout; chela (Fig. 3E) 1.30 times longer than carpus, distal part of fingers practically obscured by tufts of thick setae; dactylus 0.60 times as long as palm, with 2 corneous claws (Fig. 3F); fixed finger terminating in corneous claw (Fig. 3F); carpus slightly widened distally; merus 5.6 times longer than wide, with tiny spiniform tubercle on dorsal margin proximally and with short row of spiniform setae on ventral margin proximally; ischium unarmed. Second pereopod (Fig. 3G) moderately slender, reaching antennal scale; chela about 0.20 times as long as carpus; carpus consisting of 7 articles, third article longest, occupying 0.36 times of whole carpal length; merus subequal in length to ischium; ischium with 3 prominent spiniform setae on ventral margin proximally. Third to fifth pereopods relatively long and slender, generally similar (Fig. 1). Third pereopod (Fig. 3H)

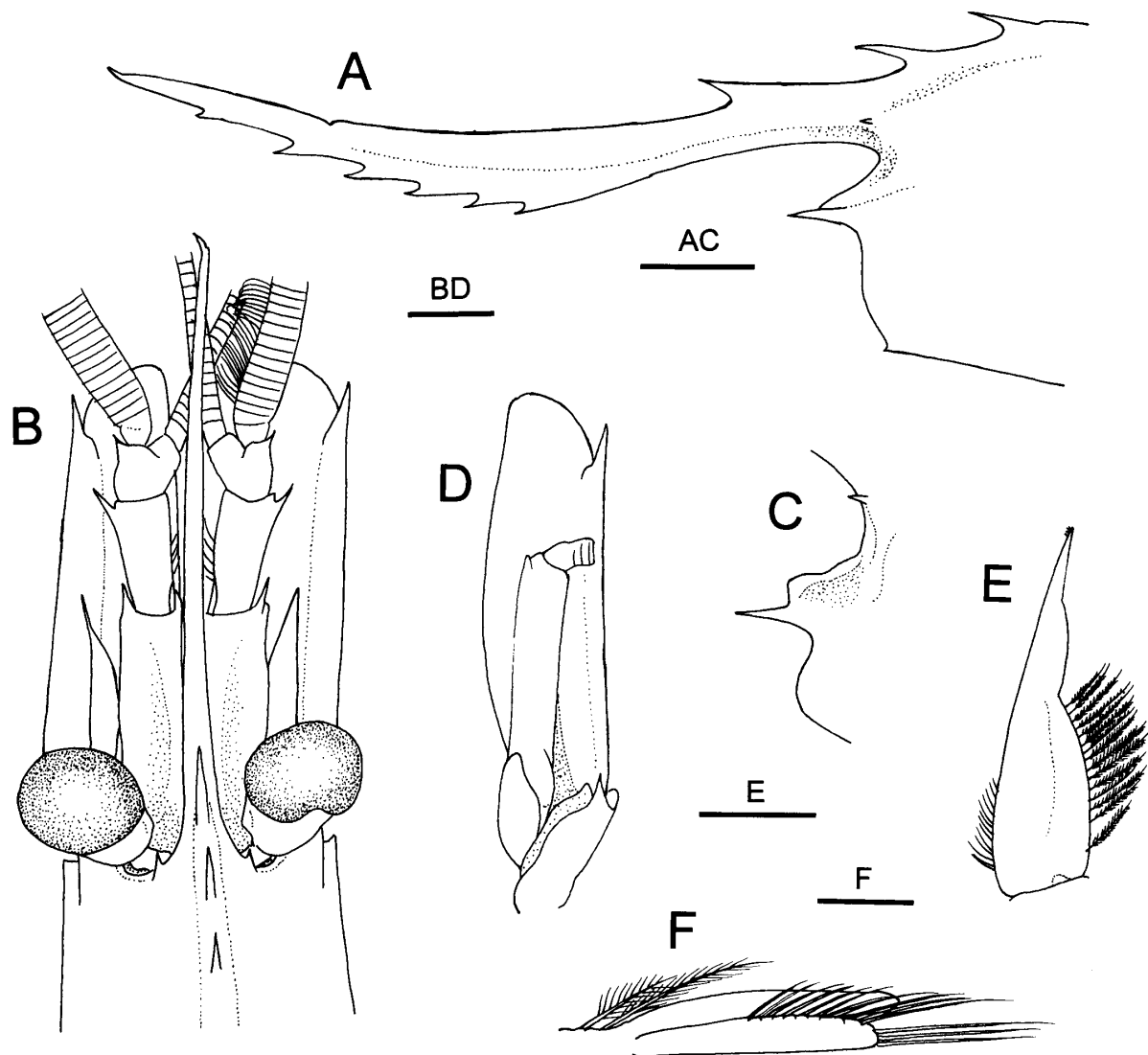


Fig. 2. *Lebbeus manus*, new species, holotype, male (cl 10.8 mm). A, rostrum and anterior part of carapace, lateral view; B, anterior part of carapace and cephalic appendages, dorsal view (setae partially omitted); C, orbital and anterolateral margins of carapace, dorsolateral view; D, antenna, ventral view (setae omitted, flagellum broken off); E, endopod of left first pleopod, ventral view; F, appendices interna and masculina of left second pleopod, mesial view. Scale bars: 2 mm for A–D; 1 mm for E; 0.5 mm for F.

overreaching antennal scale by about half length of propodus; dactylus (Fig. 3I) 0.18 times as long as propodus, 3.90 times longer than wide, bearing 5 accessory spinules on flexor margin; these accessory spinules noticeably increasing in size distally; propodus about 15.0 times longer than wide, with 2 rows of slender spinules on flexor surface; carpus 0.64 times as long as

propodus; merus about 12.5 times longer than wide, armed with 5 lateral spines; ischium unarmed. Fourth pereopod (Fig. 3J) overreaching antennal scale by about 0.30 length of propodus; dactylus (Fig. 3K) 0.19 times as long as propodus, with 5 accessory spinules; carpus 0.62 times as long as propodus; merus with 6 lateral spines. Fifth pereopod (Fig. 3L) reaching antennal scale

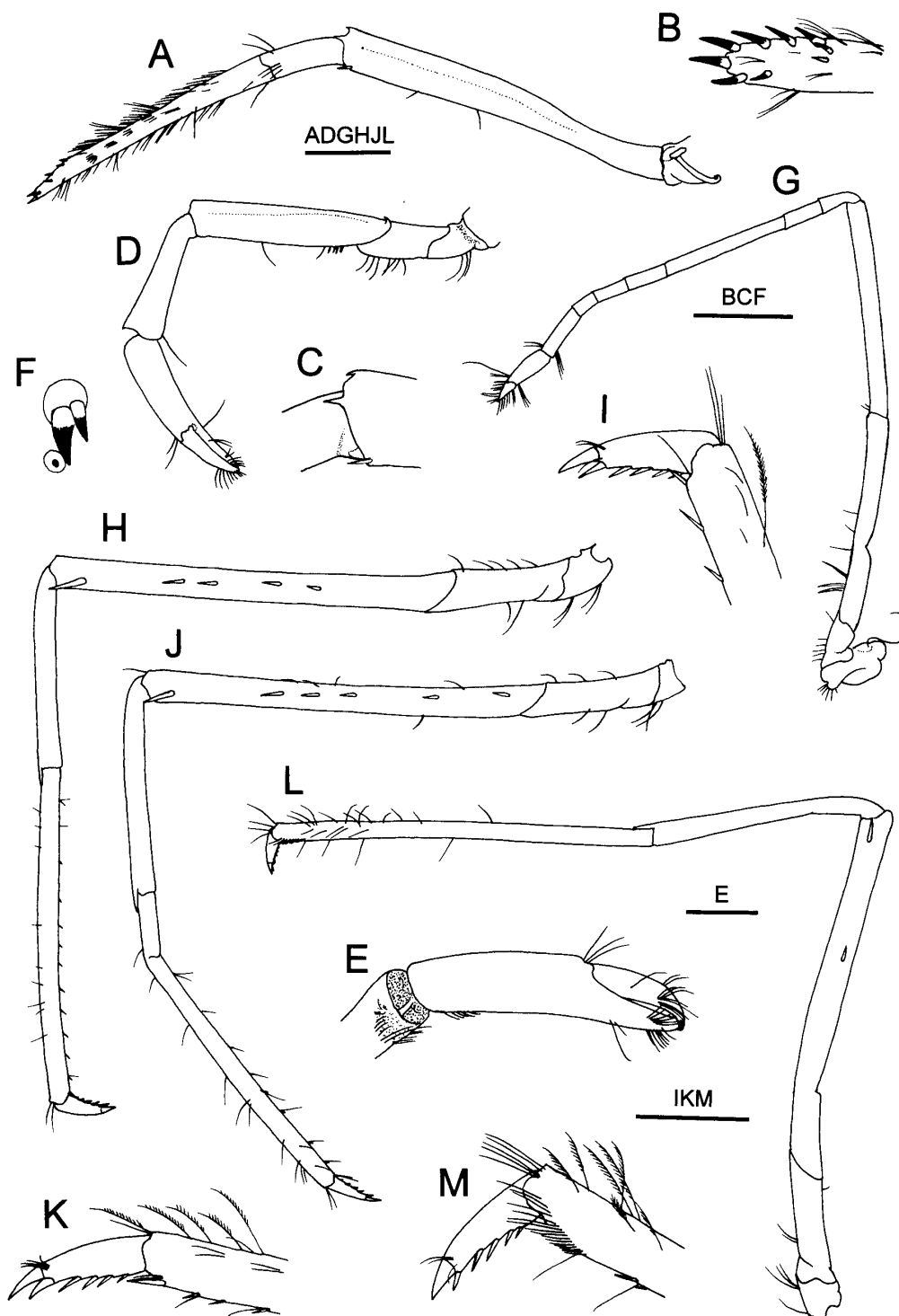


Fig. 3. *Lebbeus manus*, new species, holotype, male (cl 10.8 mm), left thoracic appendages. A, third maxilliped, lateral view; B, distal part of ultimate segment of third maxilliped, dorsal (extensor) view; C, distal part of antepenultimate segment of third maxilliped, lateral view (setae omitted); D, first pereopod, lateral view; E, chela of first pereopod, ventral (flexor) view; F, tips of fingers of first pereopod, apical view; G, second pereopod, lateral view; H, third pereopod, lateral view; I, dactylus and distal part of propodus of third pereopod, lateral view; J, fourth pereopod, lateral view; K, dactylus and distal part of propodus of fourth pereopod, lateral view; L, fifth pereopod, lateral view; M, dactylus and distal part of propodus of fifth pereopod, lateral view. Scale bars: 2 mm for A, D, G, H, J, L; 1 mm for B, C, E, I, K, M; 0.5 mm for F.

Table 1. *Lebbeus manus*, new species. Gill formula.

	Maxillipeds			Pereopods				
	1	2	3	1	2	3	4	5
Pleurobranchs	—	—	—	+	+	+	+	+
Arthrobranchs	—	—	—	—	—	—	—	—
Podobranchs	—	+	—	—	—	—	—	—
Exopods	+	+	—	—	—	—	—	—
Epipods	+	+	+	+	—	—	—	—
Setobranchs	—	—	—	+	+	—	—	—

by tip of propodus; dactylus (Fig. 3M) 0.14 times as long as propodus, with 5 accessory spinules; propodus with cluster of grooming setae on flexor surface distally (Fig. 3M); carpus 0.62 times as long as propodus; merus with 2 lateral spines.

Branchial formula summarized in Table 1. First pereopod with well-developed, strap-like epipod, but other pereopods devoid of epipods. Corresponding setobranchs present on precoxa of second pereopod.

First pleopod with endopod (Fig. 2E) elongate subtriangular; terminal lobe long, tapering distally, bearing cluster of adhesive hooks distomesially. Second pleopod with appendix masculina (Fig. 2F) slightly shorter than appendix interna, bearing numerous stiff setae on dorsal surface extending from midlength to apex. Uropod with protopod terminating in acute tooth posterolaterally (Fig. 1); exopod slightly longer than endopod.

Coloration in life.—Not recorded.

Distribution.—So far known only from the type locality.

Remarks.—Currently, 48 taxa are known in *Lebbeus* (Komai *et al.*, 2004; Jensen, 2006; Komai & Komatsu, 2009). Grouping of species within the genus according to the number of pereopodal epipods has been used by many workers (Rathbun, 1904; Holthuis, 1947; Butler, 1980; Wicksten, 1990; Komai *et al.*, 2004), and Komai *et al.* (2004) briefly reviewed this classification. The present new species belongs to the group characterized by the possession of an epipod only on the first pereopod. This group

includes five described taxa: *L. curvirostris* zarenkov, 1976, *L. elegans* Komai, Hayashi & Kohtsuka, 2004; *L. longipes* (Kobjakova, 1936); *L. vicinus vicinus* (Rathbun, 1902); and *L. vicinus montereyensis* Wicksten & Mèndez, 1982; all but *L. curvirostris* are known only from the North Pacific (Rathbun, 1902; Kobjakova, 1936; Wicksten & Mèndez, 1982; Komai *et al.*, 2004); *L. curvirostris* is known only from off Peru, eastern Pacific (Fransen, 1997). The new species is readily distinguished from these four species by characters of the rostrum, carapace, and abdomen, as summarized in Table 2. In summary, *L. curvirostris* is most similar to the new species.

Martin & Haney (2005) listed four species of *Lebbeus* from various hydrothermal vent sites in the Pacific Ocean, although they suspected that those species are not vent-endemics: *L. bidentatus* Zarenkov, 1976 from the East Pacific Rise (EPR); *L. 'carinatus'* de Saint Laurent, 1984 also from the EPR; *L. washingtonianus* (Rathbun, 1902) from the Okinawa Trough; and *Lebbeus* sp. 1 from the Lau Basin. Komai & Segonzac (2004) further mentioned the presence of *Lebbeus* aff. *washingtonianus* in the Lau and North Fiji Basins. Lastly, Ah Yong (2009) described a new species, *L. wera* Ah Yong, 2009, from hydrothermal vents on the Kermadec Ridge, northern New Zealand. Unfortunately, specific identities of all but *L. 'carinatus'* and *L. wera* remain unclear. As Komai *et al.* (2004) noted, examination of material from the northeastern Pacific is needed to establish the real identity of

Table 2. Comparison among the six allied taxa of *Lebbeus*.

Characters	<i>L. manus</i> n. sp.	<i>L. curvirostris</i> (1)	<i>L. elegans</i> (2)	<i>L. longipes</i>	<i>L. v. vicinus</i> (3)	<i>L. v. montreyensis</i> (4)
Length of rostrum	1.32 of CL	rostrum broken	0.61–0.80 of CL	0.70–1.10 of CL	1.10 of CL	ca. 0.67 of CL
Direction of rostrum	directed forward	strongly upturned	directed forward	directed forward	directed forward	directed forward
Dorsal rostral series of teeth	with 3 teeth, including 2 on carapace, distal 0.80 unarmed	with 3 teeth, including 2 on carapace, distal part largely unarmed	with 4–7 teeth, including 2 or 3 on carapace, distal 0.25–0.60 unarmed	with 4–6 teeth, including 2 or 3 on carapace, distal 0.50–0.60 unarmed	with 7 or 8 teeth, including 2 on carapace, over entire length	with 3 or 4 teeth, including 2 or 3 on carapace, at least distal half unarmed
Ventral armament of rostrum	with 6 teeth on distal half	with at least 5 teeth on more than distal half	with 1–4 teeth on distal 0.25	with 2–5 teeth on distal 0.20–0.50	at least 4 teeth on distal half	with 4 teeth
Dorsal rostral teeth	relatively long	relatively long	relatively short	relatively short	relatively short	relatively short
Supraorbital tooth	very small, not merged into orbital margin	very small, not merged into orbital margin	moderately small, merged into orbital margin	moderately small, merged into orbital margin	no information	no information
Anterolateral margin of carapace	slightly sinuous	slightly sinuous	notably sinuous with distinct concavity inferior to antennal tooth	notably sinuous with distinct concavity inferior to antennal tooth	slightly sinuous	slightly sinuous
Posteroventral tooth of 4th abdominal pleuron	absent	absent	absent	present	absent	absent
Third maxilliped	slightly reaching beyond antennal scale	overreaching antennal scale by 0.3 length of ultimate segment	overreaching antennal sclae by half length of ultimate segment	overreaching antennal scale by 0.2–0.3 length of ultimate segment	no information	slightly overreaching antennal scale
Locality	Manus Basin	off Peru	Sea of Japan	Sea of Japan, Sea of Okhotsk	Alaska	Baja California

(1) after Freansen (1997); (2) after Komai *et al.* (2004); (3) after Rathbun (1904); (4) after Wicksten & Méndez (1982).

*L. washingtonianus*. A study reviewing *L. washingtonianus* and related taxa is now in progress (Komai, Tsuchida & Segonzac, in prep.). *Lebbeus* '*carinatus*' is a junior homonym of *L. carinatus* Zarenkov, 1976, and thus the former taxon requires a replacement name (Komai *et al.*, 2004; Komai, 2006); although the specific identity of this taxon is rather clear. The present new species is the third species of *Lebbeus* positively recorded from hydrothermal vents.

**Etymology.**—Named after the type locality, Manus Basin. Used as a noun in apposition.

Family Nematocarinidae

Genus *Nematocarcinus* A. Milne-Edwards, 1881

*Nematocarcinus* sp. aff. *exilis* (Bate, 1888)

(Figs. 4–6, 7A, B)

**Material examined.**—One subadult female (cl 9.8 mm), dive 57, Solwara 1, site C9, 03.78°S, 146.09°E, 1577 m depth, from

coral, spider shrimp voucher sample, 27 April 2007, suction sampler, CBM-ZC 9630; 1 juvenile (cl 5.8 mm), dive 54, Solwara 1, site Lob, 03.79°S, 146.10°E, 1540 m depth, sample LB, spider shrimp juv. Vouchers, 26 April 2007, suction sampler, CBM-ZC 9631.

**Description of subadult female.**—Rostrum (Figs. 4, 5A) nearly straight, reaching distal end of antennular peduncle, 0.40 times as long as carapace; dorsal margin armed with 24 small, subequal teeth, including 17 on rostrum proper and 7 on carapace posterior to orbital margin, posteriormost 3 basally articulated, others all fixed; these teeth rather closely set, becoming more widely spaced anteriorly; posteriormost tooth arising at 0.14 of carapace length; ventral margin unarmed. Carapace (Figs. 4, 5A, B) with postorbital, first and second cervical and branchiocardiac sulci, all sulci shallow but clearly discernible; postorbital sulcus extending posteriorly and slightly ventrad from orbital region; second cervical sulcus across midline of carapace, connected with branchiocardiac sulcus at hepatic region;

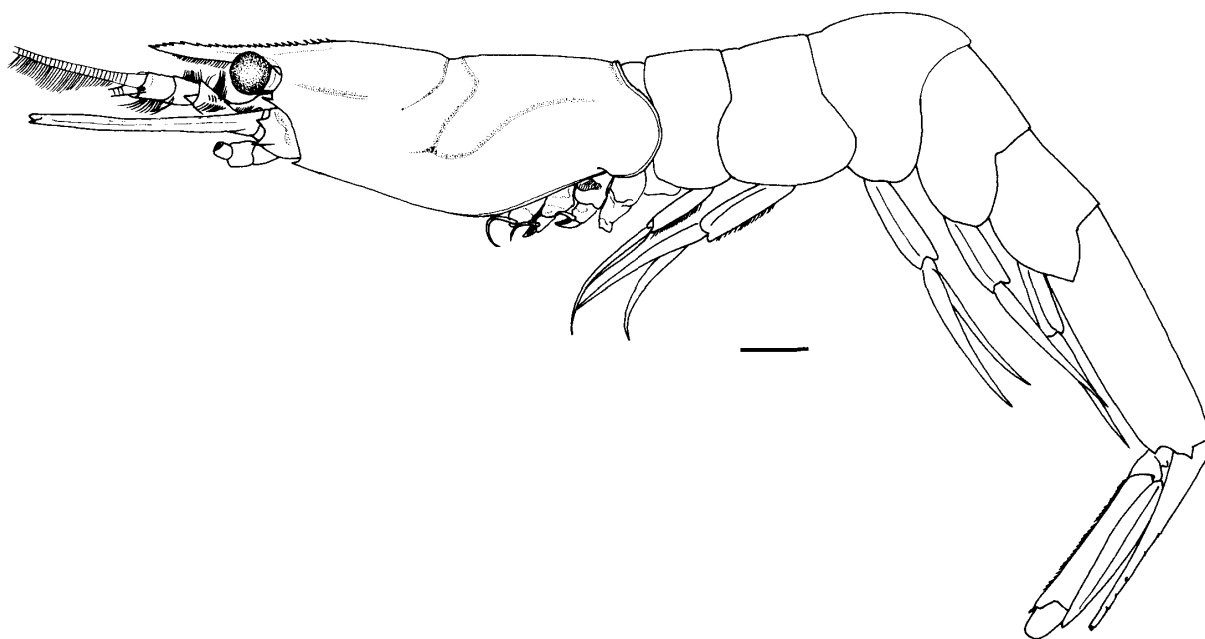


Fig. 4. *Nematocarcinus* sp. aff. *exilis* (Bate, 1888), subadult female (cl 9.8 mm), habitus in lateral view (thoracic appendages omitted). Scale bar: 2 mm.



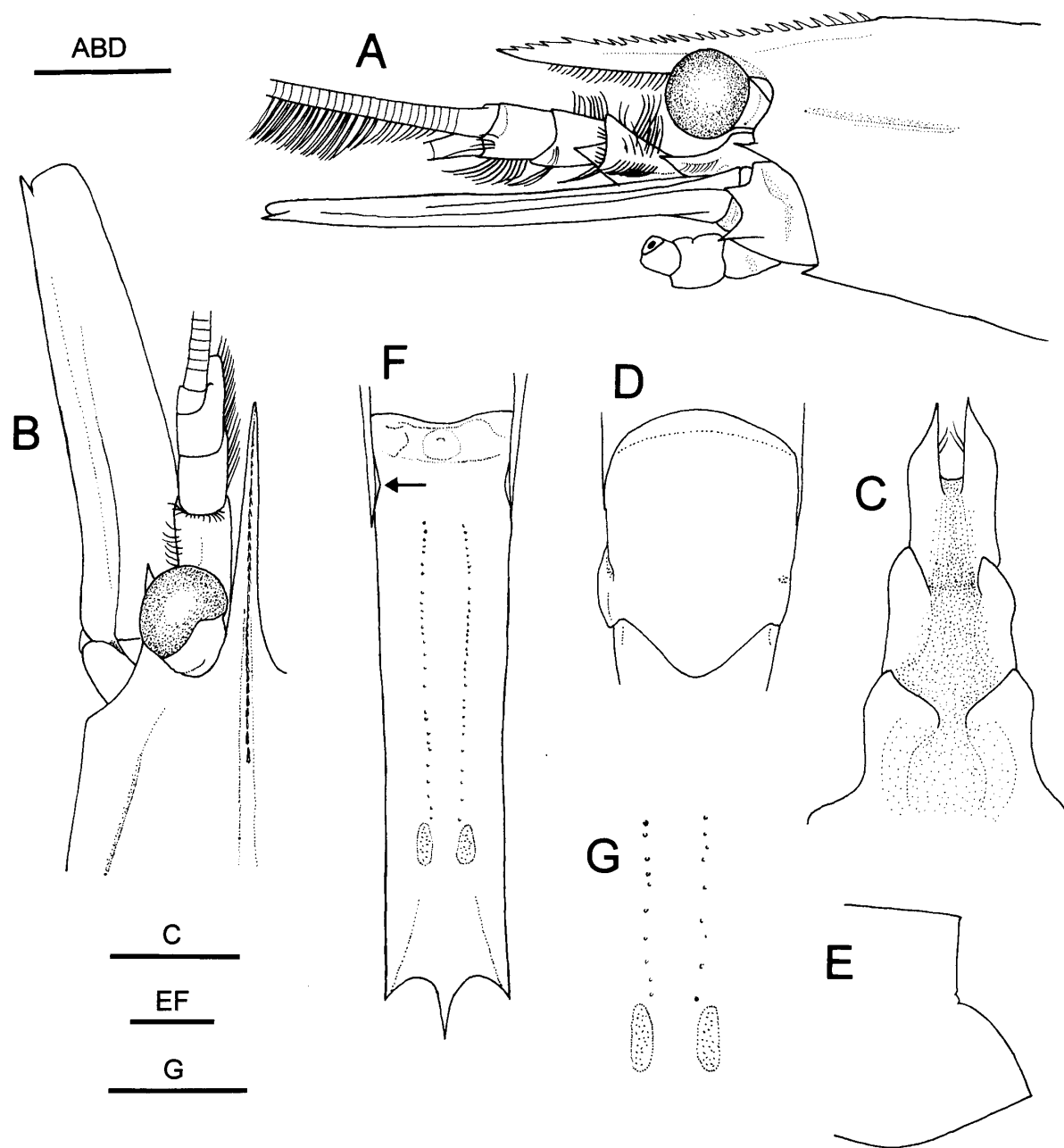


Fig. 5. *Nematocarcinus* sp. aff. *exilis* (Bate, 1888), subadult female (cl 9.8 mm). A, anterior part of carapace and cephalic appendages, lateral view; B, anterior part of left side of carapace and left cephalic appendages, dorsal view (setae partially omitted); C, sixth to eighth thoracic sternites, ventral view; D, third abdominal somite, dorsal view; E, posterior part of fifth abdominal pleuron, lateral view; F, posterior part of fifth abdominal pleuron and sixth abdominal somite, ventral view (setae on ventral surface of sixth somite missing; arrow indicating inner ridge of right fifth pleuron); G, posteroventral organ of sixth abdominal somite, ventral view. Scale bars: 2 mm for A, B, D; 1 mm for C, E, F, G.

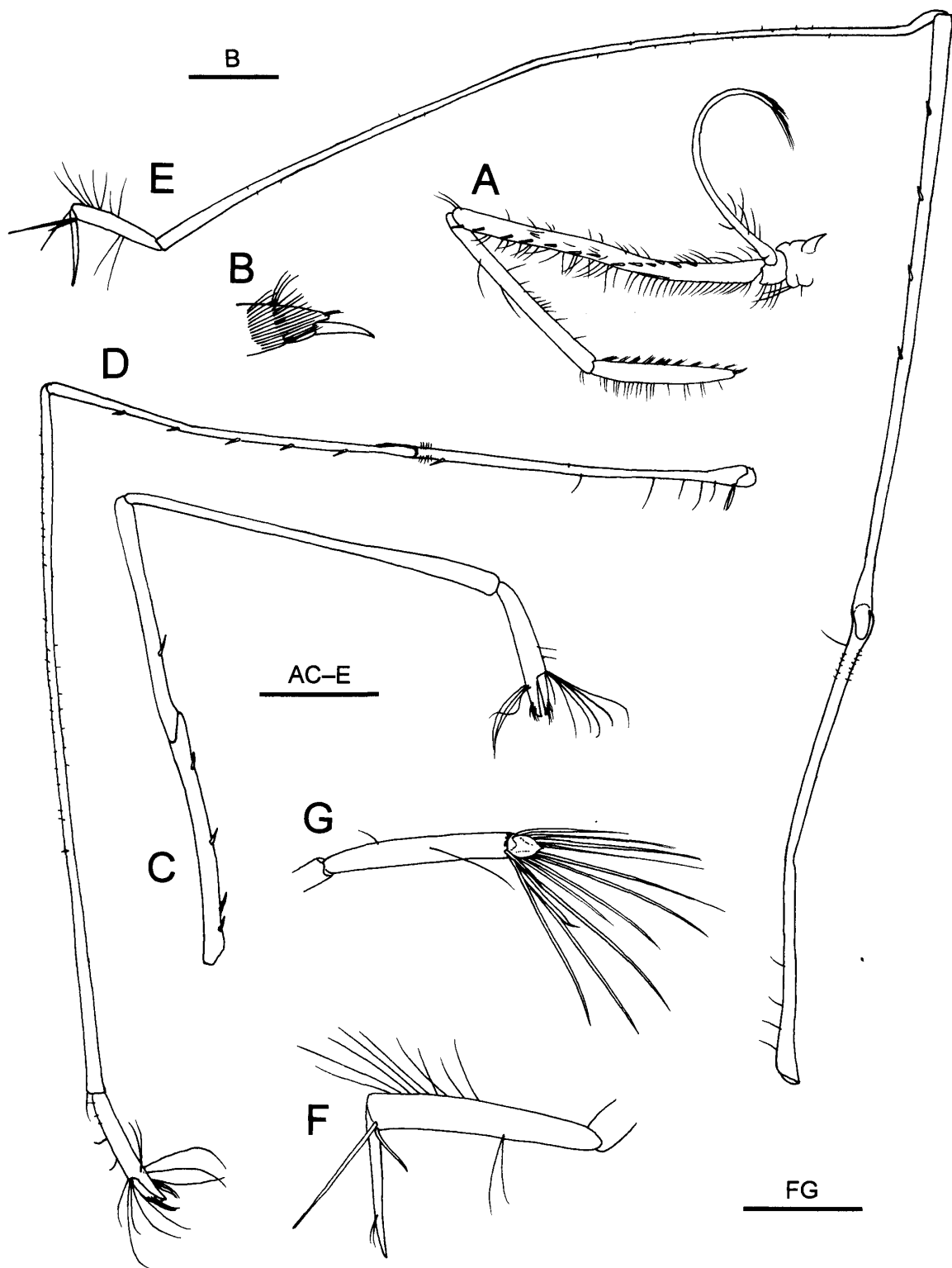


Fig. 6. *Nematocarcinus* sp. aff. *exilis* (Bate, 1888), subadult female (cl 9.8 mm), thoracic appendages. A, left third maxilliped, lateral view; B, tip of ultimate segment of left third maxilliped, mesial view; C, right first pereopod, lateral view; D, left second pereopod, lateral view; E, left third pereopod, lateral view (distal spiniform setae partially broken off); F, dactylus and propodus of left third pereopod, lateral view; G, dactylus and propodus of left fifth pereopod, flexor view. Scale bars: 2 mm for A, C-E; 1 mm for F, G; 0.5 mm for B.

postrostral ridge low, becoming gradually obscure posteriorly, but trace extending to 0.40 of carapace length; antennal and pterygostomial teeth well developed, sharp; broadly rounded suborbital lobe present.

Sixth thoracic sternite (Fig. 5C) with paired prominences each terminating in forwardly directed, slender spine; paired prominences on seventh and eighth somites terminating in blunt projections.

Abdomen (Fig. 4) with pleura rounded on four anterior somites; third somite (Fig. 5D) rounded posteriorly, not much produced posteromedially; fifth somite with pleuron armed with small, sharp posteroventral tooth (Fig. 5E) and low inner ridge visible in ventral view (Fig. 5F); sixth somite about 2.5 times longer than fifth somite and 3.0 times longer than high; ventral surface (Fig. 5F) with single row of setae on either side of midline extending to anterior end of posteroventral organ; posteroventral organ (Fig. 5G) not elevated, elongate suboval, situated at about posterior one-fourth of sixth segment; pre-anal tooth sharp, slightly curved. Telson (Fig. 4) 0.86 times as long as sixth somite, slightly falling short of endopod of uropod, armed with 5 pairs of dorsolateral spinules and 2 pairs of posterior spines.

Eye (Figs. 4, 5A, B) subpyriform; cornea about as broad as long, maximum diameter 0.12 of carapace length, basal margin shallowly notched on dorsal side; eye-stalk shorter than cornea, narrowed basally.

Antennular peduncle (Fig. 5A, B) relatively slender, slightly overreaching midlength of antennal scale; stylocerite reaching about midlength of first segment, concave, but not sharply notched dorsally in lateral view.

Antenna (Fig. 5A, B) with stout basicerite, bearing triangular dorsolateral process and sharp ventrolateral tooth distally. Antennal scale 0.70 times as long as carapace, about 4.80 times longer than wide; lateral margin slightly concave in proximal half and nearly straight in distal half; distal lamella subtruncate, distomesial margin

reaching as far as distolateral tooth.

Mouthparts not dissected. Third maxilliped (Figs. 6A, 7A, B) not reaching distal end of antennal scale; ultimate segment 0.84 times as long as penultimate segment, not markedly broadened at middle, armed with slender apical spinule (Fig. 7B); antepenultimate segment subequal in length to distal two segments combined, armed with 12 slender spines on lateral margin; exopod slightly falling short of distal margin of antepenultimate segment; coxa with curved, acute process laterally.

First pereopod (Fig. 6C) moderately slender, overreaching end of antennal scale by length of chela; chela tips of fingers practically obscured by tufts of stiff setae; dactylus 0.40 times as long as palm; palm slightly broadened distally; carpus 2.7 times longer than chela; merus-ischium combined 1.2 times longer than carpus, merus subequal in length to ischium, armed with 1 ventrolateral spine arising proximal to midlength; ischium with 4 ventrolateral spines. Second pereopod (Fig. 6D) very slender, much longer than first pereopod; dactylus about half length of palm, slightly curved; carpus 5.40 times longer than chela; merus-ischium combined subequal in length to carpus, merus with 5 ventrolateral spines; ischium slightly shorter than merus, with 1 spine subdistally. Third pereopod (Fig. 6E) elongate, filiform; dactylus (Fig. 6F) slender, straight, gradually tapering distally, about 0.70 times as long as propodus; propodus (Fig. 6F) very short, subcylindrical, slightly broadened distally, truncate distal margin circumscribed by long stiff setae; carpus about 8.1 times longer than propodus; merus-ischium combined about 1.3 times longer than carpus, merus longer than ischium, armed with 4 (left) or 5 (right) ventrolateral spines; ischium unarmed (left) or armed with 1 subdistal ventrolateral spine. Fourth pereopod missing. Fifth pereopod generally similar to third pereopod; dactylus (Fig. 6G) very short, broadly lanceolate, terminating in sharp spine; merus and ischium unarmed.

Exopods present on first to fourth

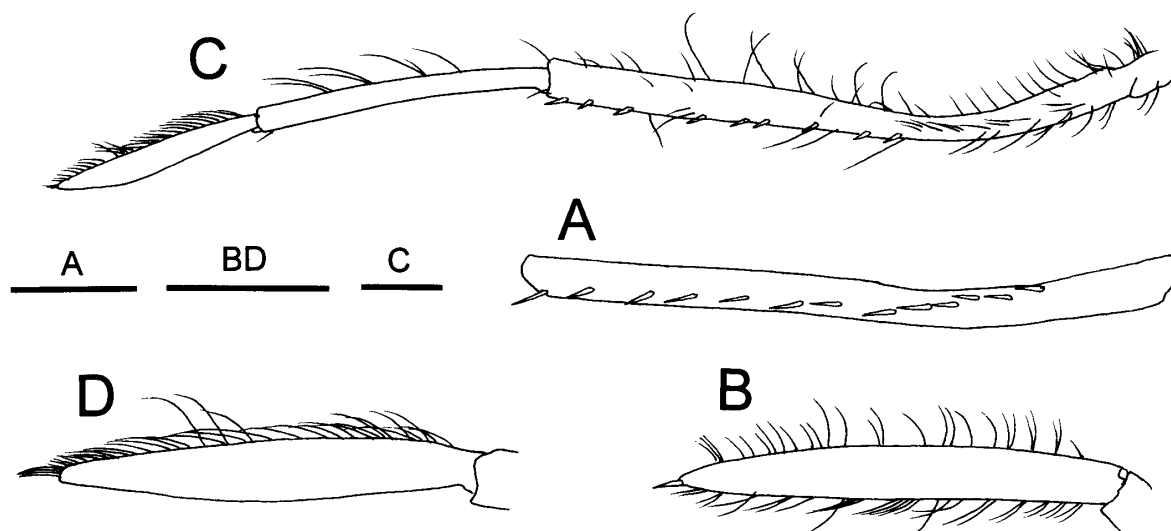


Fig. 7. A, B, *Nematocarcinus* sp. aff. *exilis* (Bate, 1888), subadult female (cl 9.8 mm); C, D, *Nematocarcinus exilis* (Bate, 1888), subadult male (cl 10.1 mm), Bay of Biscay, France, MNHN-Na. A, antepenultimate segment of third maxilliped, lateral view; B, D, ultimate segment of same appendage, lateral view; C, entire third maxilliped, lateral view (exopod missing). Scale bars: 1 mm.

pereopods, becoming shorter posteriorly, all flexible.

Exopod of uropod longer than endopod (Fig. 4), with slender posterolateral spine.

Coloration in life.—Red throughout length of body with orange coloration on dorsal surface of carapace and abdomen.

Remarks.—At present, 44 species of *Nematocarcinus* are known from the world oceans (Burukovsky, 2003, 2004a, 2004b, 2006; Komai & Segonzac, 2005). The present subadult specimen agrees well with *Nematocarcinus exilis* (Bate, 1888) known from the eastern Atlantic and the Mediterranean in every diagnostic aspect. Comparison between the southwestern Pacific specimen and the material from the eastern Atlantic and the Mediterranean failed to find any significant difference in diagnostic characters cited by Burukovsky (2003). Nevertheless, minor differences are found in characters of the third maxilliped. The number of lateral spines on the antepenultimate segment is more numerous in the Manus specimen than in the European specimens examined (12 versus six to 11);

and these lateral spines are more elongate in the Manus specimen than in specimens from European waters (cf. Fig. 7A, C). The ultimate segment seems to be more broadened at the middle in the European specimens than in the Manus specimen (cf. Fig. 7B, D). At present, there are no *Nematocarcinus* species widely distributed in the Atlantic and the Pacific Oceans. As only a single, subadult specimen and a juvenile one were available for study, a final determination must be postponed until more material from the Manus Basin is collected.

The juvenile differs from the subadult female in the rostral length and armature. The rostrum is proportionally longer in the juvenile, 0.51 times as long as the carapace; the dorsal teeth number 10, including six on the carapace and four on the rostrum proper, and the ventral teeth number six. These differences are probably due to ontogenetic change.

*Nematocarcinus* species have been encountered at some hydrothermal vent sites, but specific identities of most records remain unclear (Martin & Haney, 2005;

Komai & Segonzac, 2005). *Nematocarcinus burukovskyi* Komai & Segonzac, 2005, described from the East Pacific Rise, is the only positively identified species collected in hydrothermally influenced fields.

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